

Ethnic-Fijian Education: Re- visiting the Old Problem of Science Achievement at School

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SUMMARY OF PRESENTATION

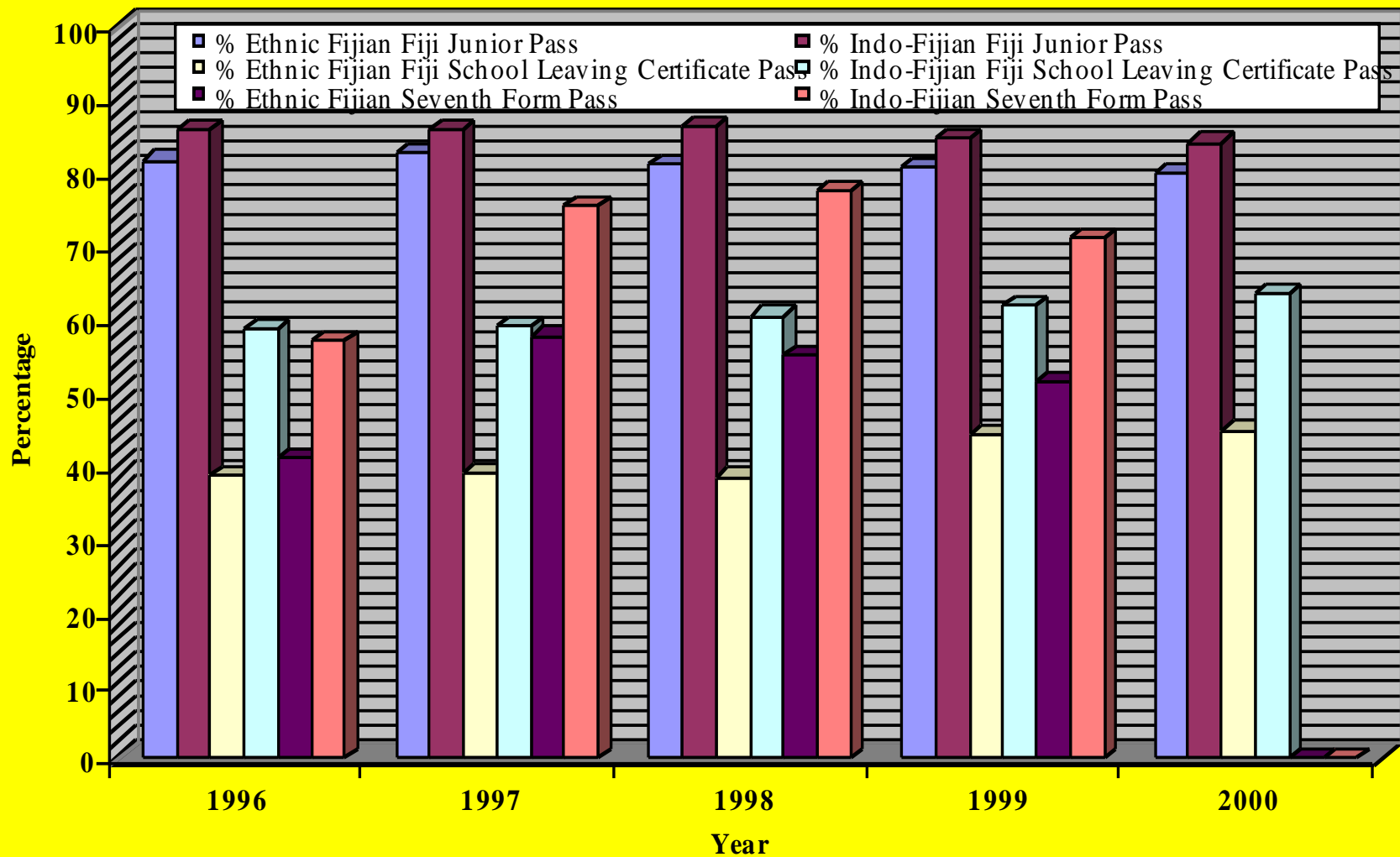
- **What is the Problem (Some figures to show)**
- **Consequences of the Problem**
- **Why is it Important to Redress the Problem**
- **Some Government Measures to Solve the Problem and whether these measures solve all the Problem**
- **My Rationale, Assumption, Hypothesis & Reasons, Research Aims.**
- **Some Questions, Focus Area of Study & Why Intensive Study on these areas.**
- **Field Work: Data Collection Techniques.**
- **Findings.**
- **Conclusion.**
- **Recommendations: How to Overcome the Problem (Solution).**

WHAT IS THE PROBLEM?

- ❖ The Indo-Fijians have consistently done better than Ethnic Fijians in standardised external school examinations - particularly in science at all school levels.
- ❖ Caused widespread absence of Ethnic Fijian participation at the National level in occupations requiring advanced knowledge of science and technology.

FIGURE 1

% Pass Rate of Ethnic Fijian and Indo-Fijian Students in Fiji Junior, Fiji School Leaving Certificate and Seventh Form Examination from 1996 to 2000.

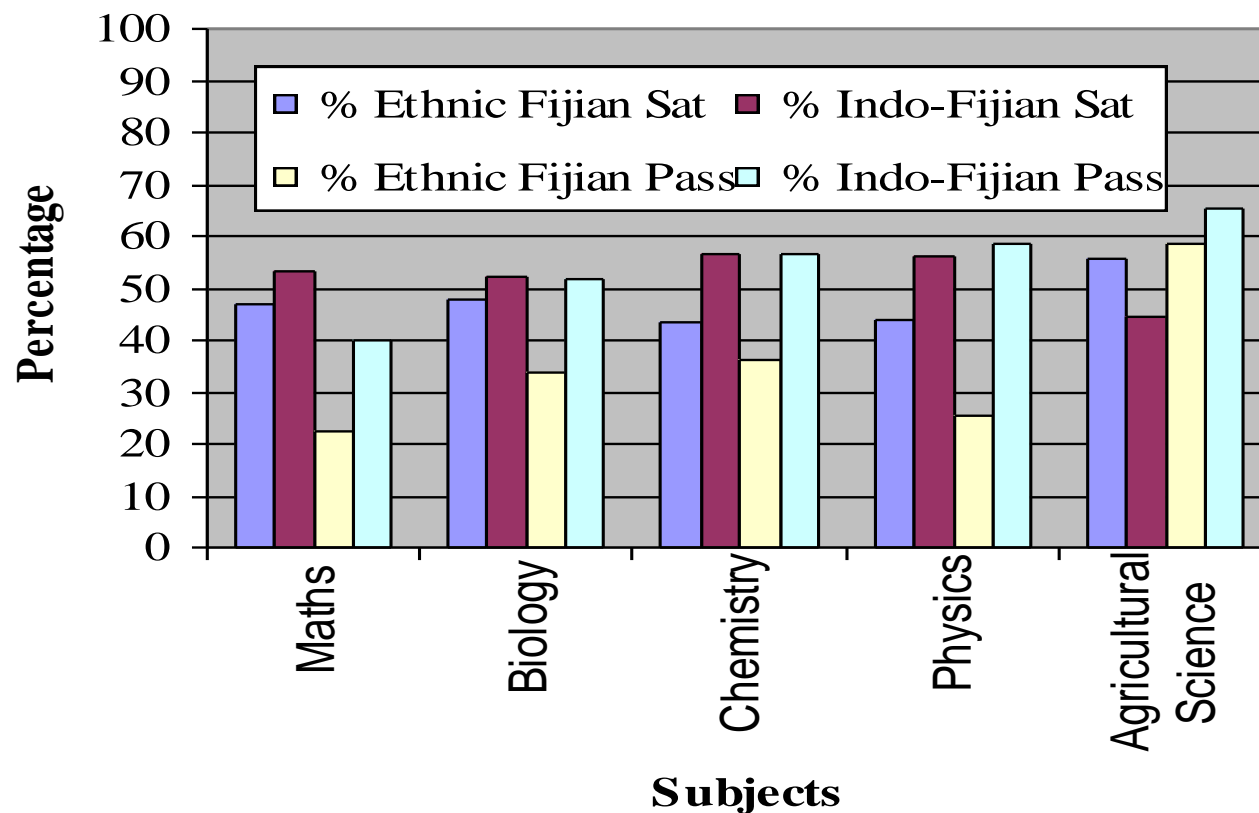


WHAT FIGURE 1 SHOWS

- ❖ In all the national examinations - Fiji Junior (Form 4), Fiji School Leaving Certificate (Form 6) and the Fiji Seventh Form examination, Indo-Fijian students do better than their Ethnic Fijian counterparts.
- ❖ The trend begins at lower exam level and is more pronounced at higher school level.
- ❖ Appearance at lower school examination level signifies - problem begins at an earlier school stage.

FIGURE 2

Form 6 Fiji School Leaving Certificate % Sat and Pass Rate per Science subject by Race in 1999



WHAT FIGURE 2 SHOWS

- ❖ Ethnic Fijian students' % pass rate in science subjects are below that of Indo-Fijian students.
- ❖ More Indo-Fijian students sat science subject examinations than Ethnic Fijians (except Agricultural Science)
- ❖ Indo-Fijian students were (without exception) more likely to pass those examinations than Ethnic Fijians.

FURTHER DIMENSION OF DIFFERENCE

- ❖ Ethnic Fijian exam passes are more heavily weighted into the C category (with very few A and B grade passes) as compared to Indo-Fijian students in science subjects.

TABLE 1

Table 1. *Seventh Form Grades of Pass per Science Subject by Race from 1998, 1999 and 2001*

Year	Ethnicity	Pass Grades	Mathematics	Chemistry	Biology	Physics
1998	Fijian	A	2	0	0	0
		B	72	17	15	10
		C	322	132	164	97
	Indian	A	68	0	2	10
		B	680	277	170	254
		C	749	460	494	315
1999	Fijian	A	8	2	1	3
		B	100	50	53	30
		C	350	180	134	113
	Indian	A	156	82	73	72
		B	528	305	241	253
		C	924	432	329	318
2001	Fijian	A	3	1	4	-
		B	121	34	30	27
		C	427	159	158	134
	Indian	A	138	68	59	74
		B	650	312	238	250
		C	904	437	367	324

DOES THE PROBLEM CARRIES ON TO UNIVERSITY LEVEL?

❖ Yes – (Table 2)

Table 2. % Pass and Enrolment of Ethnic Fijian and Indo-Fijian First Year Science Students at the University of the South Pacific from 1983 – 1993 and from 1997 to 2002

Years	Ethnic Fijian		Indo Fijian	
	% Enrolment	% Pass Rate	% Enrolment	% Pass Rate
1983	23	50	58	82
1984	21	45	45	80
1985	24	58	56	83
1986	39	71	44	91
1987	43	76	44	92
1988	33	76	41	86
1989	26	60	43	91
1990	24	52	70	83
1991	21	48	72	80
1992	16	45	74	76
1993	12	42	77	73
1997	67.4	38.7	32.6	46.7
1998	59.4	43.9	40.6	64.3
1999	54.2	82	45.8	76.3
2000	63.3	40.4	36.7	57.6
2001	63.8	60	36.2	79.4
2002	58.7	71.8	41.3	75.6

CONSEQUENCES OF THE PROBLEM

- ❖ **Not promoting the cultural, social, political and economic development and self-determination of several races as a single nation in Fiji.**
- **Development and self-determination requires a fair and collective contribution and participation of all ethnic groups.**
- **Building of a nation is a collective responsibility of different races living in it.**

WHY IS IT IMPORTANT TO REDRESS THE PROBLEM IN SCIENCE?

❖ **Fiji - needs to rely on human resources in Science and Technology today to:**

- **Improve its economy.**
- **Facilitate technological advancement.**
- **Understand and evaluate the pressure to implement new technologies.**
- **Be competitive in the World's free market economies.**

SOME GOVERNMENT MEASURES TO SOLVE THE PROBLEM

- ❖ **Reservation of 50% Government tertiary scholarship funding for Ethnic Fijians.**
- ❖ **Establishment of Junior Secondary Schools in rural areas to cater for the rural Ethnic Fijian population.**
- ❖ **Building of new science laboratories and supplying of chemicals and science apparatus to rural Ethnic Fijian schools.**
- ❖ **The expansion of teacher-education facilities and improvement in the quality of teacher education.**

DO THESE MEASURES SOLVE ALL THE PROBLEM?

- ❖ Some pieces of the puzzle have already been considered and attempted by the Government.
- ❖ Yet - the statistics still indicate the achievement gap.
- ❖ Indication - there are still further pieces of the puzzle to consider.

MY RATIONALE AND ASSUMPTION

❖ Rationale:

- To examine another piece of the puzzle- one as yet not brought into view at all in the Government's actions.

❖ Assumption:

- The differences that most matter - begins earlier.
- Differences - may have to do in part with:
 - the nature & quality of discussion and thinking in the school and home environment of the two ethnic groups.

MY HYPOTHESIS AND REASONS

❖ Hypothesis:

- Problem at both secondary and tertiary level originates at the lower school level (Primary):
 - mainly at school in terms of the teaching and learning of the subject
 - partly within the wider cultural experience surrounding young children.

❖ My reasons:

- This is where science is first taught.
- At primary level, ethnic teachers teach in their respective ethnic schools.
- First point of contact between children from the respective cultural backgrounds with formal education.

RESEARCH AIMS

- ❖ To examine in detail another piece of the puzzle concerning why Ethnic Fijian students perform less well in science than Indo-Fijians.
- ❖ To suggest ways in which Ethnic Fijian students' performance in science at school can be improved.

GENERAL QUESTIONS

- **Why are Ethnic Fijian students not doing as well in science at school when compared to Indo-Fijian students?**
- **What is their under-achievement at school related to? Is it related to the teaching of the subject or to their cultural upbringing or both? Are there other factors? If so, what other factors?**
- **Is what they learn at school viable within the context of their cultural and traditional up-bringing?**
- **What sort of changes can be made to improve the performance of Ethnic Fijian students in science at school?**

FOCUS AREA OF STUDY

- ❖ Ethnic Fijian and Indo-Fijian primary schools and their respective communities.
- ❖ Restricted to:
 - **School setting** - direct relationship between the child, peers and teacher in the teaching, learning and assessment of the subject (science) at Primary level.
 - **Home setting** - direct relationship between the child, parent and other members of the social group of which the child is a part.
- ❖ Intensive study of school and home microsystems

WHY INTENSIVE STUDY OF SCHOOL & HOME MICROSYSTEMS?

- ❖ **To find out - multiple interactions between the two settings.**
- ❖ **Child as a base - looked at interactions with:**
 - the teachers at school
 - the parents at home
 - the peer group and other members of the family or community
 - sorts of activities, & roles which characterise these microsystems of the child.
- ❖ **What directed my attention to these interactions:**
 - Bronfenbrenner's (1979) ecological theory of development.
 - Socio-cultural theory of development.
- ❖ **Theory - help to determine how these interactions affect student's psychological growth and development.**

DATA COLLECTION TECHNIQUES

❖ Three types:

- Multiple observations.
- Semi-structured open-ended interviews.
- Document analysis of prescribed syllabi and selected policy documents.

FIELD WORK

❖ Conducted in Fiji schools

❖ What I did:

- Intensive study - 4 carefully selected rural ethnic primary schools & their communities (2 Ethnic Fijians & 2 Indo-Fijians).
- Also visited 2 ethnic urban schools – look at its parallel with the rural schools visited.
- Look at - multiple interactions of child in school and home microsystem of the two ethnic communities.

OBSERVATION AT SCHOOL

❖ Classroom teaching

- Type of teaching and learning involved.
- Interactions between the students, teachers & other students.
- Difficulties faced by students in the classroom & whether or not it is related to the teaching of the subject.
- Look at students' note books & texts; syllabuses & curriculum covered; how teachers construct and analyse tests & exams.

❖ Physical set up of the school:

- Type of materials or resources available: student's text, activity books, science equipments, filing system, other materials necessary for the enhancement of teaching.

❖ Activities out side the classroom

- Morning and afternoon activities and duties.

OBSERVATION AT HOME

❖ Spend substantial amount of time in looking at:

- Interactions between the child, parents and other members of the community.
- Cultural background of students.
- Lifestyle activities, their roles and how important are their activities and roles they do for their lives in the village or community they live in.

❖ Listen to people's spoken words & engaging in conversations with participants.

❖ Sometimes - work alongside the community - in their allocated communal tasks - to gain more information about their roles and activities.

INTERVIEWS

❖ Informal with:

- Students, Teachers, Parents, Community Members

❖ On what area?

- their experiences and perceptions about the chosen theme area related to the teaching and learning of science at school.
- the relationship between what the child or parents do at home to the child's school work.

DOCUMENT ANALYSIS

❖ Type of documents

- Prescribed science syllabi.
- Course prescriptions.
- Science Teacher's Handbook.
- Curriculum documents – (Curriculum Development Units).
- Ministry of Education Annual Reports.
- Test papers and analysis forms from the various schools.
- Newspaper articles, other documents –e.g. lists of Fiji primary schools & exam results for the two ethnic groups (Ministry of Education & USP).

DATA ANALYSIS

- ❖ **Involves both qualitative & quantitative aspects.**
- ❖ **Interview based analysis - done concurrently with the classroom teaching observation analysis.**
- ❖ **Construct tables in some cases - to quantify some aspects of the qualitative data from teaching observations & interviews.**
- ❖ **Tables - interpreted together with the interviews and document sources as far as feasible.**

MY FINDINGS

❖ **Direct interactions -Child &Teacher at School (A microsystem)**

• **Teachers' practices and beliefs: – Both ethnic teachers:**

- involve students in group work but mainly direct them all the time – (authority of the teachers - always paramount).
- stuck slavishly to instructions given in the teacher's guide or text book. (little opportunity to engage with students' spontaneous thinking or follow constructivist teaching.
- taught according to syllabuses set out by the M.O.E.
- emphasised rote learning and note giving.
- asked more recall-type questions & gave few opportunities for students to ask questions in class.

FINDINGS Cont.

❖ Direct interactions -Child &Teacher at School (A microsystem)

•Teachers' Practices and Beliefs: – Both ethnic teachers:

- regularly switched to their own/native language during teaching.
- regarded students' preparation for exams as very important.
- regularly set & conduct trial tests questions similar to MOE blueprint & previous years' National exam questions before final exam.
- made sure that all examinable topics - covered before exam.
- spent more weeks in doing revision before final exam.

WHAT THIS FINDING MEAN ABOUT THE TEACHING OF THE SUBJECT AT SCHOOL?

- ❖ Impossible to credit the difference to the teaching approach for there is not much differences found in the approach used by the two ethnic teachers in teaching science.

FINDINGS.

❖ Exosystem Influences (At school)

• National Curriculum

➤ has a significantly academic focus & very little emphasis placed on vocational areas. [shown by many examinations].

➤ inflexible yet better suited to schools in urban areas than to schools in rural or inland areas.

➤ contents - still found to be removed from real life.

[mismatch between the science learned at school and the real life situation of Ethnic Fijian students in the village whereas on the other hand, there seems

to be a somewhat better match between what Indo-Fijian students learn at school and their real life situation at home].

FINDINGS Cont.

❖ Exosystem Influences. (At school) Cont.

• School Resources

- no significant difference by ethnicity in terms of availability of school resources for the schools studied.
- However - there is always a gap between rural and urban schools in terms of availability of:
 - good teachers,
 - good library and teaching resources (e.g. computers) and
 - relatively easy access to transport to places of educational interest

FINDINGS Cont.

❖ Exosystem Influences. (At school) Cont.

• Teachers' qualifications & experiences.

- all ethnic teachers for the two ethnic schools had teaching certificates.
- the majority of teachers in the Indo-Fijian schools possessed additional, higher qualifications and in general had more years of teaching experience than teachers at the two Ethnic Fijian schools.
- National figures also showed this trend.

• Level of interests in science.

- in the sample - more Ethnic Fijian teachers and students had little interest in science in the first place as compared to Indo-Fijian teachers and students.
- probably relates to their own earlier development at school & their career aspirations.

FINDINGS Cont.

❖ Exosystem Influences. (At school) Cont.

• Student's relationship with teachers

- The custom of respect and deference for elders - inhibit Ethnic Fijian students from asking questions not only in class but at all. [They respect teachers like they respect any elder at home] - reflected in the classroom situation where they are always shy to ask questions in class.
- Indo-Fijian children - better disposed than Ethnic Fijian children to approach a teacher with a question after a class.
- Corporal punishment - still practised at the two Ethnic Fijian schools intensively studied but not at the two Indo-Fijian schools.
- The practice - feared by Ethnic Fijian students - represents a strong reason to refrain from asking any questions of their teachers.
- Ethnic Fijian teachers use corporal punishment at school because it's often use to discipline Ethnic Fijian children at home.

FINDINGS Cont.

❖ Exosystem Influences. (At school) Cont.

• Students' Extra Afternoon Duties at School

➤ Both ethnic schools engaged their students in doing morning duties; however in the afternoon when the school ended at 3:00 pm, whereas both Ethnic Fijian schools engaged their students with an extra one hour of outside work before sending the students home, children at the two Indo-Fijian schools were sent home at 3:00 pm.

➤ At the Indo-Fijian schools, the outside work was done by people employed by the school, and it was assumed that the children needed to use time beyond the end of the school day on their homework.

FINDINGS Cont.

❖ Direct Interactions between the Child and Parents at Home – (a microsystem)

• Students' activities and expected tasks.

➤ Indo-Fijian children - not often given hard manual work or tasks to do at home upon returning home from school than Ethnic Fijian students thus:

- Ethnic Fijian students did not have enough time or remaining energy to do their homework or study at home as compared to Indo-Fijian students.

FINDINGS Cont.

❖ Direct Interactions between the Child and Parents at Home – (a microsystem)

• Parental Roles

- In most cases - when Indo-Fijian children arrived home from school, a parent was there to meet them.
- By contrast, many Ethnic Fijian children arrived home when both their parents were still involved in communal activities.
- Result – Ethnic Fijian parents - very little opportunity to supervise their children in after-school activities and school work.
- Due to Ethnic Fijian parents' commitments to village necessities and obligations - often allocated their parental tasks to their children. [Indo-Fijian parents - in most cases only gave a few light tasks to be done by their children at home].

FINDINGS Cont.

❖ **Exosystem, Macrosystem and Chronosystemic influences on home experiences of the child.**

• **Socio-Cultural Factor: Competition versus Cooperation.**

- **Indo-Fijian students** - more adapted to system of competition always emphasized at school as compared to Ethnic Fijian students because Indo-Fijian students' privatised or independent family nature- reinforce this.
- **Ethnic Fijian students** - liable to be unused to the system of competition at school because their life situation is more defined by cooperation rather than competition. [communal nature of Ethnic Fijians – reinforce this].

FINDINGS Cont.

❖ **Exosystem, Macrosystem and Chronosystemic influences on home experiences of the child.**

• **Socio-Cultural Factor Cont. : Communalism versus Independent**

➤ Ethnic Fijian communal system of living together in villages and obeying orders from higher authorities - significantly worked against their children's flourishing at school or cottoning on to science.

➤ Indo-Fijians' independent system - enabled them to live independently and for parents to concentrate their thinking onto their children's after-school activities and school work at home.

• **Socio-Cultural Factor Cont. : Religion versus Education**

➤ Ethnic Fijians tended to put church or their religion first in their life rather than education as compared to Indo-Fijians who even though also emphasising their religion often placed education as their first priority.

FINDINGS Cont.

❖ **Exosystem, Macrosystem and Chronosystemic Influences on home experiences of children.**

• **Geographical Factor**

➤ **Distribution of the majority of Ethnic Fijians in rural areas –affected their students' science performance at school due to relative unavailability in rural areas of:**

-good teachers

-ample equipment, and transport services favourable to giving students educationally relevant field trip experiences.

➤ **Since the majority of Indo-Fijians live in urban centres where all these resources are readily available, the performance of their students in science at school is bound to be better.**

FINDINGS Cont.

❖ Exosystem, Macrosystem and Chronosystemic Influences on home experiences of children.

• Political Factors

- The greater availability of land to Ethnic Fijians - caused them not to work hard to achieve better in science at school. [they know they can always fall back on their land if they are not successful at school].
- The unavailability of land among Indo-Fijians has caused them to strive for better academic performance at school - to gain an employment opportunity to earn their living.
- The easy access of Ethnic Fijians to resources provided by the government (e.g. scholarships, funds to assist particularly Ethnic Fijian schools etc.) - causes them not to work so hard for they know that they are liable to be assisted anyway.
- The unavailability of such resources provided by the government to assist Indo-Fijians contributes to the reasons that they have for working hard at school in order to achieve the best.

CONCLUSION

- The findings - do not support, but rather refute, my initial hypothesis (that there are sufficient differences between the ethnic groups in the teaching of the subject at school to represent the main cause of the differential performance). [The uniform approach taken is largely determined 'from above', (MOE directives)].
- There are various other settings apart from the micro-setting of the school alone which influence the differential performance in science of the two ethnic groups. These settings constitute the child's direct and indirect experiences both at school and at home.
- Main areas having significant effect: socio-cultural, political, and geographical backgrounds of the two different ethnic groups.
- There seem to be a mismatch between Ethnic-Fijian social norms and those required to be successful at school. Given the current school structures therefore, Ethnic Fijian cultural upbringing tends to hinder children's academic potential at school. On the other hand the socio-cultural background of Indo-Fijians tends to match much better with what is required in order for a child to be successful at school.

MY VIEW & BELIEF

- **Ethnic Fijian Culture should not be seen as a problem.**
 - **It is not the Ethnic Fijians who are inherently less 'intelligent' than Europeans or Indo-Fijians.**
- **In fact, their cultural values and traditional lifestyles are not respected by European Educational ideals and institutions such as the ones used in the school system.**
- **The school in fact has its own unique culture, but the educational context of the home environment of Ethnic Fijians with defined social roles, lack of competition and group decision making tends to go against the Western-inspired school culture where the individual stands alone in competition with his/her peers at school.**
- **It is possible to protect Ethnic Fijian culture and at the same time improve academic performance.**

HOW TO OVERCOME THE PROBLEM

(Solution)

- **The philosophy behind schooling should be reviewed in ways to protect Ethnic Fijian culture.**
 - **A system needs to be devised that does not put so much emphasis on the teacher and external examinations. (A system which fosters competition and individuality (examinations) inevitably puts Ethnic Fijians at a disadvantage).**
 - **Ways to do this:**
 - **Schooling should not be far different from daily life. Schools to foster a group learning approach consistent with the Ethnic Fijian culture. Instead of presenting individual problems with respect to which students compete with each other, it would be appropriate to solve the problem as a whole group.**
 - **Student assessment by teachers on the work done in their classrooms should focus more on the practical work rather than concentrating purely on examination results.**
 - **Teaching approach to better reflect the experience and culture that Ethnic Fijian children bring with them to the classroom. (Contextualise student learning in their real life situation they actually faced in their communities).**

HOW TO OVERCOME THE PROBLEM (Solution) Cont.

■ **Ways to do this Cont.:**

- To do away with the two examinations at primary level but instead to replace it with a system that allows teachers to look at the overall work & to assess student activities throughout the whole year. This will:
 - remove the memorisation-based/factual focus of teaching which is currently oriented only to particular topics or subject areas that enhance outcomes (examination results).
 - give students who are good in other areas apart from ‘the academic subjects’ a chance to excel – something the present curriculum fails to do.

HOW TO OVERCOME THE PROBLEM

(Solution) Cont.

■ **Ways to do this Cont:**

- To promote scientific thinking in the classroom, there is a need for the education system in Fiji to move away from the '*scripted or directive lesson*' type of science curriculum.
- Present regime:
 - more harmful on average to the learning of the Ethnic Fijian children than it is to that of the Indo-Fijian children.
 - It further reinforces the Ethnic Fijian cultural dispositions to trust authority over evidence rather than the other way round.
 - it creates formal learning hurdles for Ethnic Fijian children that are without much if any meaning for their lives.

HOW TO OVERCOME THE PROBLEM (SOLUTION) Cont.

- **At the same time - Ethnic Fijians must try to improve the academic achievement of their children.**
 - Parents, students and teachers should work very closely with each other in helping the child's school work.
 - Create space at home for school work
 - Need to change Ethnic Fijian Parents attitudes and mindset towards schooling.
 - Need to correct Parents' 'misconception' that their children's academic school work is the sole responsibility of the teachers at school.
 - They should realise that the development of a child (as shown by this research) depends on various settings in which the child is a part and not only on what the child or teacher do at school. The home micro-system plays a very important part too for the development of a child since that is where the child spend most of his/her time.



THE END